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Self-Efficacy Beliefs for Technology Integration of University Students in North India: An Empirical Analysis

Amit Kumar Uniyal, Bharti Bahuguna

Abstract: ***A self efficacy belief plays an vital and inevitable role in the formation of perception, behavior, confidence throughout our life. Be it the compatibility with the technology or any another thing. Its use is ubiquitous now days. Technology has creeped and infiltrated in our every facet of life. In this Manuscript empirical analysis is done to understand the integration of the technology with the self efficacy beliefs. To measure the confidence in acceptance, understanding and use of technology in real life projects, online research papers of high index (Scopus, SCI and W.O.S) were referred for secondary data. A modified questionnaire (Ling Wang, Peggy A. Ertmer, Timothy J. Newby) was used as per the requirement of the study. Simple random sampling was used, responses were collected through goggle forms. Cronbach alpha =0.941 indicates the reliability of the scale. The analysis indicates that males and post graduate students are a bit less confident in the computer technological capabilities and strategies. Students in the age group 20-22 years are most confident in the self efficacy and belief of the technological capabilities and strategies, those below 20 years of age are highest instable for the use of technology in real life. If the belief and self efficacy is positive then the confidence in the use of technology in real life projects and in academics will be high and vice-versa. Highly positive correlated.***

Keywords: Self Efficacy, Belief, Technology, Integration. Confidence

I. INTRODUCTION

Use of technology is ubiquitous in the 21st century in schools, now days in schools students had to deal with the instructional technology on daily basis. To communicate, coordinate, complete the assignments, do research they have to interact with the use of internet, computers, laptops, tablets etc. Fletcher (2006) [1]. To cope up with the work environment these competencies are necessary 21st century (Spires, Lee, & Turner, 2008) [2].

Due to the accessibility of technology, many administrators of educational institutions in this century have mandated the integration of technology with the academic system in classrooms of all aged students. (Fletcher, 2006).

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***** Correspondence Author (s)
Amit Kumar Uniyal*, Associate Professor, Graphic Era Deemed to be University-Dehradun, (U.K.) Email ID: amituniyal171@gmail.com
Bharti Bahuguna, PGT-Mathematics- Army Public School- Nahan, (H.P.) Email ID: 2bharti26augtanu@gmail.com

The author denoted the college students of today as the net generation since their life revolves round the internet [11]. Also the technology being omnipresent and also its interwoven in the student's life [12]. Although the dramatic increase in the heavy use of technology amongst them have also increased (Oblinger & Oblinger, 2005) [3].

To demonstrate the integration of I.T. with the education for net student's very limited empirical data is available. (Rideout et al., 2010) [4],

There is a demand for the reforms in education system even if such data is not available Prensky (2001) [5].

The following data indicates that technology has creeped and infiltrated in our every facet of life.

As per research done by, Pew Research Internet Project survey on mobile technology

- 90% of Americans have cell phones
- Out of which 58% were smart phones
- 42% of respondents had tablet computer
- Use of mobile technology for academic use was high
- 73% of the teachers have allowed students to use mobiles for completing the assignments inside and outside the school. (Purcell, Heaps, Buchanan, & Friedrich,
- 2013) [6].

II. LITERATURE REVIEW

Self efficacy is based on personal judgment, on the basis of his skills and circumstances how efficiently and effectively an individual cope up with the given situation, Albert Bandura (2010)

It is one's own belief in his/her ability to overcome from that particular situation. It is how one execute the course of action to manage that particular situation, as per his capabilities of organizing and executing. (Bandura 2010)

In general the people take or reject those tasks where the self efficacy is high or low respectively. It depends. WE normally overestimates our ability to complete the tasks if the self efficacy is significantly beyond actual ability on the contrary if it is lower than the actual ability it hinders our skills development and growth. According to the manuscript the self efficacy slightly above the ability is considered to be optimum. In this situation people are most encouraged to tackle challenging tasks and gain experience. Csikszentmihalyi, M. [8], Finding Flow, (1997)

Magnitude, general ability to explain how one believes the task will be performed and strength are the main components of self efficacy. Porter, Lyman W.; Bigley, Gregory A.; Steers, Richard M. (2003) [9].

Self efficacy hypothesis has been gasped by administration

researchers and professionals since of its pertinence within the working environment. By and large, self efficacy is emphatic and emphatically related to work related execution. This relationship depends on assignment complexity. For more complex errands, the connections between self-efficacy and work execution is weaker than for simpler work-related assignments. The suggestions of this investigate is that supervisors ought to give precise portrayals of errands and give clear and brief informational they ought to give to give the essential supporting components for workers to be effective. It has to be recommended that directors ought to factor in self-efficacy when attempting to choose candidates for formative or preparing programs. It has been found that those who are tall in self efficacy learn more which leads to higher work execution. Lunenburg, F. C. (2011) [10].

The humans are affected by self efficacy in every area. Their self efficacy has the power to affect them in every situation. The power to face challenges and the type of choice an individual is going to make is strongly influenced by self efficacy.

Modeling are also referred to as vicarious experiences (Bandura, 1977) [15] are the second effective source of efficacy expectations (Chowdhury et al., 2002) [14].Self efficacy is built by Modeling by the comparing our capabilities with others in the society and self assessing (Bandura, 1977) [7].

The third source of efficacy expectation is social persuasion. Verbal judgments and the feedback, from others regarding the ability of completion of any activity affects and influences our self efficacy. (Bandura, 1984) [16]. Efficacy expectation s fourth source are the physiological states. (Chowdhury et al. 2002).

Interpretations of the failures are interpreted differently by the students of different level. Insufficient efforts is the reason given by the students having high self- efficacy and deficient abilities is the reason given by the students with low self-efficacy for their failure on the task. (Bandura, 1984).

The perception related to failure, of the students will affect his learning efforts, they will avoid learning tasks if they have low self efficacy [27]. Their motivation, behavior, thinking feelings and actions are definitely affected by self efficacy.

According to the author vicarious experiences, physiological states, performance accomplishments and vicarious experiences are the four main ways to build self efficacy. (Bandura, 1997) [13].

Skills specific tasks performing abilities are negatively affected by low self efficacy of the students (as per the research done on expressive skills) (Moreno & Kilpatrick, 2018) [17], specifically second language writing (Zabihi, 2018) [18] and speaking English in class (Cao & Philp, 2006) [19]. A number of strategies are available with the students having high self efficacy. (Yilmaz, 2010) [20]

The heritability of self-efficacy in adolescents was calculated to be 75% in a Norwegian twin sample [23]. The remaining 25% of the variation was attributed to environmental factors that were not shared by family members [24]. Individual variations in self-efficacy were not influenced by the common family environment [25]. Waaktaar, Trine; Torgersen, Svenn (2013) [21].

In research with school children, a theoretical model of the impact of self-efficacy on transgressive activity was developed and verified [26]. Bandura, Albert; Caprara et al. (2001) [22].

III. OBJECTIVES OF THE STUDY

A. To understand the impact of technology on confidence and use of technology in real life of University students.
B. To understand the association between the demographic factors and the belief for technology integration of university students.
C. To understand the relationship between the two factors

IV. RESEARCH METHODOLOGY

Research is of exploratory, descriptive and cross-sectional research. Secondary data was collected through different sites online, research papers of high indexed (SCOPUS, SCI, WOS etc.). A modified questionnaire as per the requirement of the manuscript with 18 units was used to collect the primary data (by Ling Wang, Peggy A. Ertmer, Timothy J. Newby. DOI: 10.1080 /1539 1523. 2004.107 82414. Two factors “Computer Technological Capabilities and Strategies” and “External Influences of Computer Technology” were used to study the self-efficacy beliefs for technology integration of undergraduate students. Simple random sampling was done. About 600 people were targeted, received 510 responses through goggle forms. Excel was used for data analysis. Cronbach alpha calculated was 0.941956, indicating the reliability of the scale. ANOVA single factor, t-test and correlation were used for data analysis.

V. DATA ANLYSIS

Table-I: Demographic Data

Demographic Variables	Frequency	%age
Gender Male Female Total	177 333 510	35 65 100
Age Group Below 20 years 20-22 years Above 22 years Total	351 156 03 510	69 30 01 100
Level Of Education Under Graduate Graduate Post Graduate Total	474 30 06 510	93 06 01
Stream of Education till XIIth Commerce Science with Medical Science without Medical Arts/Humanities Total	477 15 15 03 510	93 03 03 01 510

Interpretation of Table-I: Number of students taken computer classes/course before: Yes= 246 (48%) ; No =264 (52%). Out of 510 respondents 35% and 65% were male and female respectively. Below 20 years were 69%, 20-22 years 30% and above 22 years 1% of age. Under Graduate, Graduate and Post Graduate were 93%, 6% and 1% respectively. The different streams of education to which

they belong Commerce 93%, Science with Medical 3%, Science without Medical 3% and Arts/Humanities were 1% only.

A. Impact of Technology on Confidence of Students

H_{1a}: There is a significant difference between the genders and confidence in self efficacy beliefs in use of technology of university students.

H_{1b}: There is a significant difference between genders and the use of technology in academics and real life projects (use of technology Analysis of the Factors with the Genders for the Belief for Technology Integration of University Students.

Table- II: (t-test: Two-Sample Assuming Unequal Variances)

S. No.	Stress Factors	Gender	Mean	Stand. Dev.	N	d.f.	P(T<=t) two-tail	P-value	t -Critical
1.	Computer Technological Capabilities and Strategies	Male	3.351	0.871	177	365	0.009	0.004	1.967
		Female	3.564	0.862	333				
2	External Influences of Computer Technology	Male	3.449	0.874	177	365	0.003	0.001	1.966
		Female	3.696	0.889	333				

Interpretation of Table-II: Data indicates that males are a bit less confident in the computer technological capabilities and strategies as compared to females although very less. Females are more confident in external use of computer technology there is also no significant difference between the first factor and the genders. (t value=0.009 and t-critical=1.967)-H_{1a} not accepted. Both are more or less having the same level of confidence in using the technology with academics, in projects and making strategies in their implementation.

With the second factor (t-value=0.003 and t-critical=1.966) H_{1a} not accepted, indicating male and female both are confident in using the technology with their academic assignments and projects. Females are a bit more confident having mean 3.696 than males.

B. Analyze the Significant Association between the Years of Students and the Factors

Table-III: Descriptive Statistics with Computer Technological Capabilities and Strategies

Groups	Count	Sum	Average	Variance
Below 20 years	351.000	1191.214	3.394	0.716
20-22 Years	156.000	584.786	3.749	0.688
Above 22 years	3.000	3.857	1.286	0.000

Interpretation of Table-III: The students in the age group 20-22 years are most confident in the belief of the technological capabilities and strategies. Students above 22 years are least confident. The students below 20 years having the highest variance of 0.716, shows the variation in their beliefs.

Table 4: Descriptive Statistics with External Influences of Computer Technology Uses

Groups	Count	Sum	Average	Variance
Below 20 years	351	1263	3.598	0.855
20-22 Years	156	569.25	3.649	0.671
Above 22 years	3	9	3	0

Interpretation of Table-IV: Students in the age group above 22 years are least confident to use the technology in their projects or work on technology base projects or assignments. But the variance is highest for age group below 20 years indicating the high instability of the students.

Table-V: ANOVA (Single Factor): Factors with the Different Age Groups

SNO.	Sources of Variation	Sum of Squares	df	Mean Sum of Squares	F	P-Value	F-Critical
1	Computer Technological Capabilities and Strategies						
	Between Groups	28.261	2	14.131	20.045	0	3.014
	Within Group	357.401	507	0.705			
	Total	385.662	509				
2	External Influences of Computer Technology						
	Between Groups	1.402126	2	0.701	0.882	0.415	3.014
	Within Group	403.2063	507	0.795			
	Total	404.6085	509				

Interpretation of Table-V: The data indicates that computer technology capability and the confidence level in its use is not the same for all the three age groups, but it is more or less the same when it comes to the external use of computer technology in different projects and academics.

C. Analyzing the Significant Association between the Years of Education and the Factors

Table-VI: Descriptive Statistics: Education and Computer Technological Capabilities and Strategies

Groups	Count	Sum	Average	Variance
Undergraduate	474	1658.357	3.499	0.736
Graduate	30	108.429	3.614	0.757
Post Graduate	6	13.071	2.179	0.957

Interpretation of Table-VI: The graduate and under graduate students are more confident in their beliefs (like their capabilities, skills, learning new subjects with its help, evaluate software teachings etc) to use and understand the technology as compared to post graduate students. Variation in the beliefs of post graduate is quite high

Table-VII: Descriptive Statistics: Education and External Influences of Computer Technology Uses

Groups	Count	Sum	Average	Variance
Undergraduate	474	1713.75	3.6155	0.7624
Graduate	30	114.75	3.8250	0.7506
Post Graduate	6	12.75	2.1250	1.5188

Interpretation of Table-VII: Post graduate students are less confident in the use of technology in their projects like feel less compatible in application or carrying out technology based projects. or feel less comfortable in technology in studies as compared to undergraduates and graduates.

H_1: There is a significant difference between the education of students and the constructs.

Table-VIII: ANOVA Single Factor with Education

SNO	Sources of Variation	Sum of Squares	Df	Mean Sum of Squares	F	P-Value	F-Critical
1	Computer Technological Capabilities and Strategies						
	Between Groups	10.818	2	5.409	7.316	0.001	3.014
	Within Group	374.845	507	0.739			
	Total	385.662	509				
2	External Influences of Computer Technology						
	Between Groups	14.63243	2	7.316	9.512	0	3.014
	Within Group	389.976	507	0.769			
	Total	404.6085	509				

Interpretation of Table-VIII: Data indicates that there is a significant difference between the education of students and the constructs. Hence, accepting H_1 .The students of different educational levels have different confidence level in their beliefs in their capabilities, skills, learning new subjects with its help, evaluate software teachings etc. also in the use of technology in academics and different real life projects.

Table-IX: Correlation Between Two Factors

	Computer Technological Capabilities and Strategies	External Influences of Computer Technology
Computer Technological Capabilities and Strategies	1	
External Influences of Computer Technology	0.8905368	1

Interpretation of Table-IX: It is very vivid that correlations between the two factors are positive and highly correlated, +9 (approx.) indicating that if the belief and self efficacy is positive then the confidence in the use of technology in real life projects and in academics will be high and vice-versa.

VI. CONCLUSION

The humans are affected by self efficacy in every area. Their self efficacy has the power to affect them in every situation. The power to face challenges and the type of choice an individual is going to make is strongly influenced by self efficacy. Our behavior in long run is an reflection of the what we thing? Our self efficacy and beliefs has an everlasting effect on our confidence as well. As per the data analysis we can conclude that

The males are a bit less confident in the computer technological capabilities and strategies as compared to females although it's very less. Females are more confident in external use of computer technology there is also no significant difference between the first factor and the genders although males and females both are confident in using the technology with their academic assignments and projects. Females are a bit more confident having mean 3.696 than males.

The students in the age group 20-22 years are most confident in the self efficacy and belief of the technological capabilities and strategies. Students above 22 years are least confident. and that the computer technology capability and the confidence level of its use is not the same for all the three age groups, but it is more or less the same when it comes to the external use of computer technology in different projects and academics for all age groups. Students in the age group above 22 years are least confident to use the technology in their projects or work on technology base projects or assignments. Students in the age group below 20 years are highest instable for the use of technology in real life.

The data indicates that computer technology capability and the confidence level of its use is not the same for all the three age groups, but it is more or less the same when it comes to the external use of computer technology in different projects and academics

The graduate and under graduate students are more confident in their beliefs (like their capabilities, skills, learning new subjects with its help, evaluate software teachings etc) to use and understand the technology as compared to post graduate students.

Post graduate students are less confident in the use of technology in their projects like feel less compatible in application or carrying out technology based projects. or feel less comfortable in the use of technology in studies as compared to undergraduates and graduates.

Data indicates that there is a significant difference between the education of students and the constructs. The students of different educational levels have different confidence level in their beliefs in their capabilities, skills, learning new subjects with its help, evaluate software teachings etc. also in the use

of technology in academics and different real life projects.

If the belief and self efficacy is positive then the confidence in the use of technology in real life projects and in academics will be high and vice-versa. Highly positive correlated.

VII. SCOPE AND LIMITATIONS

The coverage area of the study could have been more, it is only restricted to North India. The sample size could have been more. There dimensions of the study could be more, only two constructs are considered in the study, it could be much more. The study is of exploratory, descriptive and cross sectional in nature it could be done as a longitudinal research also.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

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